

ELECTROLYTES WITH STRONG OXIDIZING ADDITIVES FOR
LITHIUM/SULFUR BATTERIES

ABSTRACT OF THE DISCLOSURE

Disclosed are oxidizer-treated lithium electrodes, battery cells containing such
5 oxidizer-treated lithium electrodes, battery cell electrolytes containing oxidizing
additives, and methods of treating lithium electrodes with oxidizing agents and battery
cells containing such oxidizer-treated lithium electrodes. Battery cells containing SO₂
as an electrolyte additive in accordance with the present invention exhibit higher
discharge capacities after cell storage over cells not containing SO₂. Pre-treating the
10 lithium electrode with SO₂ gas prior to battery assembly prevented cell polarization.
Moreover, the SO₂ treatment does not negatively impact sulfur utilization and
improves the lithium's electrochemical function as the negative electrode in the
battery cell.